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Nagase et al.

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[54] **DRUG RELEASE CONTROLLING MATERIAL RESPONSIVE TO CHANGES IN TEMPERATURE**

[75] Inventors: **Yu Nagase; Takao Aoyagi,** both of Sagamihara; **Fusae Miyata,** Tokyo, all of Japan

[73] Assignee: **Sagami Chemical Research Center,** Tokyo, Japan

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Related U.S. Application Data

[63] Continuation of Ser. No. 111,596, Aug. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 18,434, Feb. 16, 1993, abandoned.

[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**[6] **A61K 9/00**

[52] **U.S. Cl.** **424/487;** 424/486; 424/473; 424/426; 424/489; 424/451; 424/409; 424/405; 524/559; 525/450; 525/921; 525/937; 526/292.4; 526/298; 526/320; 526/321; 528/354

[58] **Field of Search** 424/487, 486, 473, 426; 524/559; 525/450, 921, 937; 526/320, 321, 292.4, 298; 528/354

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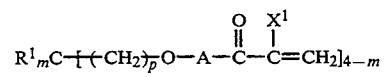
Primary Examiner—Mark Nagumo
Attorney, Agent, or Firm—Oblon, Spivak, McClelland, Maier & Neustadt

[57] **ABSTRACT**

The present invention related to a drug release controlling material responsive to changes in temperature comprising the polyester gel which is obtained by polymerization of a polyfunctional macromonomer represented by the general formula (I):



(I)

wherein R^1 represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, X^1 represents a hydrogen atom, a halogen atom, a cyano group, an alkyl group having from 1 to 6 carbon atoms or a phenyl group, A represents an aliphatic polyester chain, m is 0 or 1, and p, which may be the same or different in each branched chain, represents an integer of from 0 to 6, optionally with a polyethylene glycol derivative which contains polymerizable group(s) at the end(s). The drug release controlling material has an on-off control function of drug release responsive to changes in temperature depending upon the gel transition of the aliphatic polyester gel.

4 Claims, 13 Drawing Sheets